CAP reform in agenda 2000: an opening bid for the Millenium Round

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CAP REFORM

IN AGENDA 2000

An opening bid for the Millennium Round (CAPMAT simulations)

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Abstract

In its Agenda 2000, the European Commission decided on new reform measures for the Common Agricultural Policy. These measures imply a further shift from price to income support, by lowering intervention prices for cereals, beef and milk, and by increasing the level and scope of acreage and headage premiums so as to compensate for income losses. However, the impact on farm incomes is negative. Acreage and headage premiums increase and become the dominant item on the agricultural budget of the EU. The Agenda 2000 decision facilitates the accession of new members, and constitutes an opening bid for the WTO negotiations whose successful completion will require further adjustments.

1. Introduction[27]

In 1997, the Commission presented the first draft of its plans for preparing the European Union for the next century (CEC, 1997a). These included a reform of the Common Agricultural Policy (CAP), that proposed to amend the regulations prevailing since 1992 because of developments within the agricultural sector itself, the upcoming international trade negotiations under WTO and the planned accession of Central and Eastern European countries (CEECs). The plans were elaborated upon in the draft regulations of March 1998 (CEC, 1998a). In October 1998, the Commission published an impact assessment of the proposed reforms (CEC, 1998c). The assessment included a forerunner of the present paper (Keyzer and Merbis, 1998) that also studied the consequences of the agricultural market and price policies of the proposed version of Agenda 2000.

However, in March 1999 the meeting of the EU Council in Berlin only approved Agenda 2000 after significant modifications of the initial proposals. Whereas the Commission originally sought to improve efficiency by eliminating set-asides and by significantly reducing the support prices for the sectors beef and dairy, the Berlin compromise maintained the set-asides at ten percent, postponed the adjustments for dairy and softened other price reductions (CEC, 1999a,b). Yet the Community Preference remained in place throughout these revisions. Consequently, ACP countries can maintain their preferential imports in quantity terms, while the unit value of preferences drop as a result of the reduction in support but the other exporting countries that do not enjoy such preferences are less satisfied.

The EU is currently engaged in several major parallel undertakings such as the preparation of the accession of the CEECs, the negotiations on the new Lomé Convention, the accession of China to the WTO and the formulation of the negotiating agenda for a new WTO round. Consequently, the agricultural part of Agenda 2000 might

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[27] The current research has been conducted as part of the FEA (Future of European Agriculture) project in which three institutes from The Netherlands participate: the Netherlands Bureau for Economic Policy Analysis (CPB), the Agricultural Economics Research Institute (LEI), both in The Hague, and the Centre for World Food Studies (SOW-VU, Amsterdam). Earlier versions were presented to the Dutch parliament (based on the July 1997 proposals, see SOW-VU et al., 1998) and the EU (based on the proposals of March 1998, see Keyzer and Merbis, 1998). The comments by Mr Pierre Bascou (European Commission, DG Agriculture) and the members of the FEA team are gratefully acknowledged.

be regarded as an opening bid. Indeed the reviews scheduled in the coming years leave room for further adjustments[28].

In view of the various modifications introduced through the Berlin compromise the Commission decided to invite those who conducted an impact analysis of its earlier proposal to perform a similar exercise on the basis of the actual decisions taken in Berlin, while accounting for recent developments on world markets. This is the subject of the present paper. The paper is structured as follows. After briefly sketching the modelling approach (section 2), we describe the policies of Agenda 2000, Berlin compromise and express these as scenario assumptions, comparing them to the reference scenario of continuation of the 1992 policy regime (section 3). Next, in section 4 we discuss CAPMAT outcomes of these scenarios for the years 2005 and 2010. Section 5 concludes. Annex A contains supplementary model outcomes, and Annex B gives a summary description of the CAPMAT model.

2. Modelling approach

On the basis of outcomes of a simulation model, we describe the effects on production, demand and trade, farm incomes, and the EU budget, against the background of the upcoming WTO negotiations and the enlargement with CEECs. This model, the CAP-Modelling and Accounting Tool (CAPMAT), incorporates the CAP rules and farmers' behavioural response to a policy change, and incorporates major elements of the ECAM model (see Folmer et al., 1994, 1995). It covers the full agricultural sector of the EU, and distinguishes over forty activities and links fourteen national models.

In the present report, results are only presented for the commodities affected by Agenda 2000, either directly such as cereals, oilseeds, beef and dairy, or indirectly, e.g. pork and poultry products as these face lower feeding costs (see also Annex B). Although calculations proceed at member-state level, we limit the presentation to outcomes for EU-15 aggregates, starting in 1995, the base year of the model. Monetary values are as in the earlier report expressed in real terms, assuming a 1 % rate of inflation. This assumption is important since key policy variables such as intervention prices and hectare premiums are kept fixed in nominal terms once a reform has been implemented, and hence fall in real terms. The reform is introduced in 2000 and its effects are compared to the reference calculations in 2005 and 2010. Since long-term developments are studied, stock changes are assumed to be zero. This implies that the model only reports on possible non-compliance with the GATT export commitments without any in-built adjustment mechanism, say, by raising stocks or set-aside rates. The surplus (production minus domestic demand) is exported in full, and any exports in excess of the GATT commitments can be viewed as expressing the need for further adjustments. We point to them when they arise.

[28] Some of these reviews arise automatically when the regime of a particular commodity expires. For example the current five-year period for sugar ends in 2001, and a review is scheduled in 2002. Reviews can only be scheduled as part of the implementation of Agenda 2000. The dairy regime will be reviewed in 2003 to take the necessary measures for allowing the current quota arrangements to run out after 2006. Reviews are also planned for fruits and vegetables (2000), olive oil (2001), cereals and oilseeds (2002), and a mid-term evaluation of rural development policy will take place in 2003. Finally, a revision of hemp and flax regime has been announced recently (CEC, 1999c).

Compared to the earlier impact assessment, three major modifications were introduced. First, the time horizon for simulations was extended until 2010. This was necessary because the Berlin compromise includes policy changes that are effectuated as of 2005 only. Second, the baseline predictions on world price have changed and on the basis of recent projections of the World Bank and OECD led to downward revisions. Finally, the Berlin compromise itself implied changes to be described in the next section.

3. Reference scenario: continuation of 1992 regime

3.1 Scenario assumptions

We start with the specification of our reference scenario for the CAPMAT-model. The implementation of a scenario requires assumptions on both CAP-related policy variables and exogenous variables describing the general economic environment (e.g. growth of non-agricultural GDP, and population growth). For transparency, assumptions on exogenous variables are kept constant across scenarios.

Also for transparency, we treat world market prices as exogenous, using price projections by OECD (1999) and World Bank (1999). In the model, it would be possible to let the EU trade position affect world prices, but this effect is highly speculative as it strongly depends on the assumed policy reactions by other countries. For several products, world market prices are in sharp decline since May 1996, and an early recovery is not expected (see World Bank, 1999, p. 6). Though the projections differ to some extent, they all assert that cereal prices remain relatively low and only gradually climb to the levels of the early nineties. The long-term decline of the world prices for dairy products and beef is believed to come to halt, and possibly to reverse due to expanding world markets. Recently, Deaton (1999) has argued that the price projections of international organizations have in the past tended to be over-optimistic, and although the speedy recovery in Asia may boost demand for feed grains, in the CAPMAT scenarios we maintain conservative assumptions regarding world prices. This also applies to the assumed strength of the euro against the US-dollar. We take the average 1999-exchange rate (1€ = 1.07$) to prevail in the future period, while stressing that the model simulations are expressed in real prices (basically the agricultural prices in euros relative to non-agricultural prices).

We assume that the real export prices (in euros) of the EU for wheat, sugar, protein feeds, carbohydrates and dairy products would drop until 2000 and then start increasing over the remainder of the period. After 2000 export prices of coarse grains, rice, vegetable oils, beef and mutton remain relatively depressed. Other crops (such as vegetables, wine) remain constant until 2010 in real terms. The assumptions for fats & oils and protein feeds determine the EU-price of oilseeds (since oilseeds are after processing split into oils and cake, its price can be recovered from these two prices). As the world price for oils appears to stagnate after 2000 and the price of protein feeds is 15 % higher in 2010, the real EU-average oilseed price is about constant between 2000 and 2005 and about 5 % higher in 2010. We also make relatively conservative assumptions regarding variables directly related to agriculture. For instance, the rate of technological progress is taken to be fixed but lower than in the past, and the availability of agricultural land continues its downward trend, falling from 150.6 in 1995 to 142.2 mio ha in 2010, a decrease of 5.6 %.

Regarding policy variables, the reference scenario supposes, in accordance with present regulations, that intervention prices and premiums per hectare and animal remain constant in nominal euro terms. In real terms this implies a modest one per cent decline

due to inflation. Other policy variables, which are also kept fixed over the years 2000-2010, include:

- The set-aside rate is maintained at 10 %, which is the level of 1999.
- Dairy and sugar quotas are kept constant.
- Intervention stocks are kept constant at their 1995 level.

Furthermore, stabilizer rules are implemented to limit premium outlays, as follows:

- The premium level for cereals, oilseeds and protein crops (known as COP-crops) is constrained by a reference area, of 53.5 mio ha, for the EU-15.
- Support to other CAP commodities is constrained by the 1996-premium levels. If, after correction for inflation, premium outlays exceed the 1996-level, premium rates are scaled downwards.

3.2 Main outcomes

Production and trade

Production growth continues for most products (cf. table 4.1). For cereals and oilseeds, the driving forces are a reduction of the set-aside rate from 15 (in 1995) to 10 %, and the sustained growth in yields, which range from 0.4 to 1.7 % per annum. Milk production remains constant since quotas are kept unchanged. Hence, the number of dairy cows has to decrease by about 4 mio head. The negative impact of this reduction on beef production further amplifies the decline of the non-dairy cattle sector after 2000 which does not recover due to poor prospects as prices in real terms are depressed and food safety concerns continue.

Table 4.1 EU-15 production (mio t) and annual growth rate (%), 1995-2010

	1995	2000	2005	2010	Growth rate
Wheat	87.6	98.4	104.8	110.9	1.6
Coarse grains	89.9	95.2	99.2	102.2	0.9
Fats and oils	8.2	8.4	8.5	8.6	0.4
Fat from milk	4.8	4.8	4.8	4.8	0.0
Skimmed milk	109.1	109.2	109.3	109.4	0.0
Beef and veal	8.0	7.9	7.8	7.8	-0.1

Human consumption, in terms of quantities of farm produce, has for several years been more or less stagnant within the EU. Over the period 1995-2010, growth rates are less than 0.5 % per annum for most products, despite declining real prices and a modest growth in income and population. Feed use is stagnating as well, due to technical progress and a drop in livestock numbers for dairy cattle, while the numbers in the intensive livestock sectors show a modest growth. As the use of cereal substitutes (protein feeds and carbohydrates) for animal feeding is also declining, the share of cereals in the feed mix is rising due to the drop in cereal prices within the EU.

The trading volumes follow these shifts in production and consumption. Table 4.2 confronts exports to the existing GATT commitments, in volume terms. Export growth is pronounced for cereals and modest for other products. The steady rise in cheese

consumption within the EU reduces the amount of fat from milk available for exports of butter and cheese. The export of milk powder increases because of a decline in the use of the protein component of milk in animal feed.

The results indicate that while GATT commitments tighten by 21 % over five years, the exportable surplus expands in the case of wheat and milk powder. For wheat, the exportable surplus is 54 % higher than the GATT commitment in 2000. The excess can be absorbed by stock accumulation. Before 2000 it is possible to invoke the unused commitments of earlier years, which are allowed to be 'rolled over' but this is no longer permitted from 2000 onwards. For bovine meat, exports might overshoot due to the uncertain long-term consequences of the BSE-crisis. The annual balance of supply and demand is deceptive here, since still over 300 000 t of beef are kept in stocks, that must be sold eventually.

Table 4.2 GATT commitments and EU 15 exports (mio t)

	GATT commitments			CAPMAT exports	
	Base quantity	1995	2000	1995	2000
Wheat and wheat flour	18.3	20.4	14.4	15.9	22.1
Coarse grains	13.7	13.7	10.8	9.1	8.3
Butter and butter oil	0.5	0.5	0.4	0.2	0.1
Skimmed milk powder	0.3	0.3	0.3	0.4	0.4
Cheese	0.4	0.4	0.3	0.5	0.3
Other dairy	1.2	1.2	1.0	1.5	0.9
Bovine meat	1.0	1.1	0.8	0.9	0.8

Note: CAPMAT computes quantities of fat from milk and skimmed milk that are expressed here in own product weights of butter, SMP, cheese and other dairy, using base-year conversion ratio's.

With respect to dairy, commitments were already binding in 1995 but the tension has attenuated somewhat. Some relief might be obtained from modified product composition, since each of the four related GATT commodities listed in table 4.2 basically is a mix of the same two ingredients, fat and protein. The data in the table are constructed using constant conversion ratios and thus neglect possible substitution, but this is generally believed to be a minor effect only. We notice that the table does not show the GATT commitments for pigs, poultry and eggs. The EU can meet these under the prevailing arrangements, since there is no intervention price for these products, by allowing the internal price to adjust downwards whenever export subsidies have reached their ceilings.

Table 4.3 Exports (mio t), EU-15, and annual growth rate (%), 1995-2010

	1995	2000	2005	2010	Growth rate
Wheat	15.9	22.1	29.4	35.8	5.6
Coarse grains	9.1	8.3	14.0	17.5	4.5
Fat from milk	0.4	0.3	0.2	0.3	-2.1
Skimmed milk	11.8	13.5	14.0	15.1	1.7
Beef and veal	0.9	0.8	0.7	0.8	-0.6

Table 4.3 presents the development of exports in the longer run, highlighting the fundamental CAP problem. As long as all agricultural land is used, consumer demand is stagnating, and increases in productivity persist, the exportable surplus will rise steadily, and requires export subsidies since world prices are expected to remain considerably below the 1992 intervention prices. Thus, the CAP has to choose between maintaining

Community Preference with all production controls in place or making the essential steps towards genuine tariffication and full transmission of world prices.

Agricultural income

Real income from agricultural activities –defined in table 4.4 as net revenues inclusive of transfers, premiums and subsidies– would rise by 0.5 % per year during the period 1995-2010. This fairly modest increase is the net result of a much greater increase in production volume and a reduction in real prices. At the same time, a significant reduction in the workforce takes place, by 2.4 % annually. Consequently, the income per full-time agricultural worker rises by 3.0 % annually. Although an increasingly greater portion of income will have to be allocated to capital as opposed to labor, it can be concluded that total earnings in the agricultural sector will more or less keep pace with other sectors in the economy.

Table 4.4 Farming income and employment, EU-15

	1995	2000	2005	2010	Growth rate
Total farming income (bio €)	138.8	139.5	144.2	150.3	0.5
Farm population (mio)	7.8	7.0	6.3	5.5	-2.4
Farming income ('000 €/cap.)	17.8	19.9	23.1	27.5	3.0

Further adjustments to meet existing GATT commitments

As mentioned earlier, meeting the GATT commitments will require additional policy adjustments. Since according to CAPMAT, the budgetary cost of the CAP falls by 0.4 % per annum, in real terms, there would seem to be sufficient budgetary room for such adjustments modifications, within the spending guideline for the EAGGF. In the absence of further reform, the EU basically has, for cereals, the choice between two options for meeting the GATT export commitments. The first is to absorb the surplus through intervention stocks, and the second to raise the set-aside rate. In practice, the EU might resort to a combination of both policies, and also raise payments for set-asides to compensate for the income loss. The costs of the stockholding option will be high and rising over the years, whereas higher set-asides rates will leave valuable land resources idle, and will be opposed by member states with large cereal production.

The reference scenario: a summary

Under the reference scenario, agricultural production continues to grow, and agricultural incomes per worker stay in line with growth in other sectors due to sustained labor outmigration. The EAGGF does not increase in real terms and remains well within the spending guideline but this calculation ignores the costs of meeting the existing GATT commitments. Yet from a budgetary perspective the need for reform is far less than in the seventies and eighties when export refunds and storage costs constituted the dominant budget items and exhibited sharp fluctuations. Currently, the EAGGF largely consists of premium payments, which cannot increase since they are fully restricted by stabilizer regulations. As the total refunds under the WTO rules are now constrained as well, farmers' incomes are the only remaining adjustment mechanism when prices are low and compensating mechanisms reach their maximum. This might generate political pressures for special support measures in exceptional years.

Two further problems have to be faced if the CAP was kept unchanged or subjected to minor revisions. First, it appears that in the preparatory discussion for the Millennium Round competing exporters ask for further agricultural trade liberalization. Second, the integration of Central and Eastern European countries will become difficult because the policy keeps EU prices above those that currently prevail in these countries. According to (CEC, 1998b) support prices for most products in the EU are still higher than corresponding prices in the CEECs, and (OECD, 1998) shows that, measured by PSEs, support in EU is more than twice as high as in the transition countries.

4. The Agenda 2000 scenario

4.1 Scenario assumptions

The agricultural chapter of Agenda 2000 sets new levels for intervention prices and premiums and new rules for market organization (CEC, 1999d), which reduce price support, especially for cereals and bring further reform to the dairy and bovine sector. The following set of policy rules and model assumptions describes how these were incorporated within the CAPMAT model. As mentioned earlier, world market prices are kept at their reference scenario level.

In the scenario to be presented only the policy changes stated in Agenda 2000 are being represented, and regulations for olive oil, tobacco, fruits and vegetables, sugar beet and wine sectors are kept as in the reference scenario. This is despite the fact that the wine sector reform is part of Agenda 2000, with the rules that govern the rights to plant new orchards adjusted and distillation rules sharpened, while the existing measures on managing exports and imports are retained. We disregard environmental measures and rural development policies (measures for early retirement, aid to young farmers, etc.) to the extent that the present amounts in EAGGF are kept frozen at 1996 level. The outlays of the Coherence Fund and the Structural Fund are also exogenous in CAPMAT and frozen at 1996 level, and we disregard the new budget lines that will be opened up when new members join the Union.

Scenario implementation of Agenda 2000

For the crop sector, the following policies are implemented. First, the price decisions of Agenda 2000 for intervention prices are taken to be representative of changes in market prices within the EU in the sense that a reduction in intervention price is taken to translate fully into a reduction in market and farm gate prices[29]. Specifically, intervention prices are reduced by 15 %for cereals (in two steps in the years 2000-2001), for beef by 20 %(in three steps over the period 2000-2002), for milk by 15 % (in three steps over the period 2005-2007). Second, the compulsory set-aside rate remains at 10 %, while compensating premiums are made more uniform. All cereals and oilseeds now receive the same premium (63 €/t) with a mark-up for pulses (9.5 €/t), and a supplement for durum wheat. These premiums are translated into acreage premiums on the basis of regionalised reference yields. Silage maize is treated as cereals. The Northern part of

[29] Sugar is an exception. The sugar beet price is derived from the intervention price of sugar after deducting the unit sugar levy, that producers (and farmers) must pay to balance the export refunds of sugar surpluses. Specifically, the so-called C-sugar and re-exports of ACP-sugar do not count as sugar surpluses.

Sweden and Finland receive additional hectare premiums for the drying of cereals and oilseeds.

In the dairy sector, milk quotas are raised by 2.39 % in total but there is differentiation across member states. For most member states quotas are increased by 1.5 % in three steps, starting 2005. Five member states (Greece, Spain, Ireland, Italy and UK, but for Northern Ireland only) receive specific quotas increases in two steps already starting in 2000/'01. The present milk quota regime is extended until 2008 (in CAPMAT until 2010).

The livestock sector also receives compensation for the fall in prices. Starting in 2005, dairy cows receive a premium that will increase in three equal steps, rising to 17.24 €/t for which all production up to the milk quotas is eligible. Premiums are gradually increased for cattle in pace with the phasing in of the price changes. The premiums for sucklers rise to maximally 200 €/head, for bulls 210 €/head, for steers 300 €/head. Adult animals and calves are eligible for slaughter premiums of 80 and 50 €/head, respectively.

Each member state also receives two sets of financial envelopes which at their own discretion can top up payments on male or female bovines and dairy cows, providing them some flexibility to compensate for regional differences in production practices and agro-ecological conditions. In total, these envelopes direct 493 and 910.7 mio euro to bovine and dairy sectors, respectively (in CAPMAT these envelopes are treated as direct payments to farmers and are thus part of farming income but do not affect cattle's net revenues per head). Furthermore, the deseasonalisation premium is abolished but the extensification premium is increased to 100 €/head, if livestock density falls below 1.4 livestock units per hectare (with adjusted amounts for higher densities, up to 2 LU/ha).

Stabilizing mechanisms

Premium outlays are capped by ceilings, in conformity with the old and new regulations. The stabilization mechanism for cereals, oilseeds and protein crops is maintained. If the planted acreage of COP crops exceeds the reference area, premiums are scaled down proportionately. The supplement for durum wheat is split into a high and low payment, both limited by reference areas. For the beef sector the existing herd size and density constraints continue to hold. For the special premiums (granted to steers and bulls) and for the suckler premiums, the numbers of eligible animals are taken from an update of (CEC, 1997c). We assume that the 1995-ratio of eligible animals divided by totals also determines eligibility in later years. The number of eligible animals cannot exceed the ceilings stated in the regulation on beef (CEC, 1999d). In fact, the ceiling for males proves to be binding in most countries, and especially for Ireland and UK. The same approach is followed for the extensification premiums, where historic rates are taken due to lack of data to replace them. The use of stabilizing mechanisms limits the total of premium outlays in nominal terms, and hence implies a reduction in real terms.

4.2 Scenario outcomes under Agenda 2000

We discuss the effects on production, consumption, trade, budget and farmers' incomes. Additional outcomes are presented in Annex A. All measures are introduced in the year 2000, and we compare the outcomes to those of the reference scenario in 2005 and 2010.

Community preference

The policy changes of Agenda 2000 can be interpreted as a further step in reducing the gap between internal prices of the EU and the world market. The present regulations already cause this gap to narrow down because of inflation but Agenda 2000 accelerates the process. If we accept the projection that world prices will remain relatively low in the next decade, then the gap between internal and external prices for wheat is only closed by 2010[30]. In that year, most other prices will be closer but still well above world market level (cf. table 4.5). Consequently, refunds eventually vanish for wheat while for coarse grains there still is a difference of 21 €/t. For beef, the gap is reduced by half relative to the very high levels of above 1000 €/t. The assumption of a 1 % rate of inflation is a major driving force behind this reduction, and also applies for the reduction in refunds for fat from milk and skimmed milk that fall by 50-80 %.

Table 4.5 Ratio of internal and external price

	1995	Reference 2010	Agenda 2000 2010
Wheat	1.38	1.19	1.01
Coarse grains	2.51	1.54	1.31
Fat from milk	4.43	2.79	2.37
Protein from milk	2.05	1.30	1.10
Beef	2.29	1.89	1.51

Production and activity levels in Agenda 2000

In the CAPMAT model, changes in activity levels follow from changes in relative net revenues per hectare or head. These are triggered by changes in prices and premium rates. It appears that the net revenues of cereals and oilseeds have fallen (see Annex A). For cereals, the increase of premiums only partly compensates the 15 % price fall. For oilseeds the premiums have dropped. The shift in relative profitability between cereals and oilseeds induce a reallocation within the COP area: cereals gain and oilseeds lose. Yet the stabilizing mechanism applied to the COP crop premiums ensures that COP area remains below the reference area. Net revenues per head of non-dairy cattle are reduced, as increases in headage premiums and slightly lower costs cannot make up for the fall in price. At EU level, this results in a 2.5 % reduction in non-dairy cattle numbers and a small negative impact on beef production (cf. table 4.6).

This is because a non-dairy cattle basically remains a grass-based activity for which alternative usage is scarce. Net revenues of dairy cattle fall in all member states, on average by 11 %.

[30] In earlier version of Agenda 2000, and under higher projections for wheat prices on the world market, and deeper price cut for intervention prices, the EU was able to export without subsidies, see Keyzer and Merbis (1998).

Table 4.6 EU-15 production in 2005 and 2010 (mio t)

	Reference		Agenda 2000	
	2005	2010	2005	2010
Wheat	104.8	110.9	108.0	116.4
Coarse grains	99.2	102.2	99.4	103.9
Fats and oils	8.5	8.6	8.4	8.1
Pulses	7.6	7.8	7.3	7.3
Sugar refined	17.1	16.9	17.0	16.9
Fat from milk	4.8	4.8	4.9	4.9
Skimmed milk	109.3	109.4	110.7	111.6
Beef and veal	7.8	7.8	7.7	7.7
Pork	17.3	17.4	17.3	17.7
Poultry meat	8.0	8.0	8.0	8.2

Milk production expands nonetheless, following the expansion of milk quotas, which continue to be binding. There is also a modest expansion of the intensive livestock sector (less than 1 %), which is driven by higher consumption at lower prices.

Consumption and feed use

Dairy and meat consumption increases due to lower prices (cf. table 4.7). This holds especially for beef where the price reduction is strongest and assumed to be transmitted in full to the consumer. As in the 1992 reform, the changes in relative prices between cereals and cereal substitutes cause a further rebalancing: feed usage of cereals increases by 3.8 mio t, at the expense of lower usage of the grains substitutes, i.e. protein feeds and carbohydrates.

Table 4.7 EU-15 consumption and feed/seed use in 2010 (mio t)

	Consumption		Feed/seed use	
	Reference	Agenda 2000	Reference	Agenda 2000
Wheat	45.6	45.7	32.4	33.5
Coarse grains	31.5	31.5	58.6	61.3
Fats and oils	14.5	14.5	1.2	1.2
Pulses	2.5	2.5	5.3	4.9
Sugar refined	12.7	12.7	0.1	0.1
Protein feeds	---	---	14.3	13.5
Carbohydrates	---	---	9.1	8.6
Fat from milk	4.5	4.5	0.2	0.2
Skimmed milk	81.7	82.1	16.6	16.6
Beef and veal	7.3	7.7	---	---
Pork	16.0	16.1	---	---
Poultry meat	7.6	7.6	---	---

Trade

Table 4.8 shows that the exportable surplus of cereals increases by 3.3 mio t, while that of wheat even rises by 4.3 mio t (but recall that stocks are kept fixed). Whereas the wheat price will eventually reach world market level, coarse grains prices remain well above world market level and the surplus exceeds the GATT commitments by 3.7 mio t. Yet the difference from the assumed world market prices proves to be small and suggests that

existing GATT commitments could be met if coarse grains prices are reduced slightly. This would stimulate domestic feed use and at the same time cause a production shift towards wheat.

The exportable surplus of dairy shows a moderate shift in terms of fat and protein components, as increase in consumption keeps pace with the expansion of the dairy quotas. The problem of exporting the surplus of skimmed milk powder seems to worsen. In general, meeting the GATT commitments for dairy products until 2005 becomes more difficult since the first enlargement of the milk quotas occurs well before the intervention prices are being lowered. The exportable surplus of beef returns to levels below the GATT commitments, since the substantial price reductions discourage beef production, while stimulating consumption. Changes in the system of intervention stocks, that will eventually be replaced by a system of private stocks supported by subsidies, are also likely to contribute to lowering production. Refunds decrease substantially, for coarse grains by 45 % and for dairy by 40 %, indicating that the reduction of the price gap makes it easier to meet the GATT constraints.

Table 4.8 EU-15 exports in 2005 and 2010 (mio t)

	Reference		Agenda 2000	
	2005	2010	2005	2010
Wheat	29.4	35.8	31.9	40.1
Coarse grains	14.0	17.5	12.3	16.5
Butter	0.1	0.2	0.1	0.2
Skimmed milk powder	0.4	0.5	0.5	0.5
Cheese	0.3	0.4	0.3	0.4
Other dairy	0.8	1.1	1.0	1.1
Beef and veal	0.7	0.8	0.1	0.3

Note: exports of fat from milk and skimmed milk are expressed in own product weights of butter, SMP, cheese and other dairy, using base-year conversion ratio's.

Revenue from farming

Total farming income, i.e. the net revenues including transfers, premiums and subsidies, falls by 3.8 %, compared to the reference scenario in 2010. Agenda 2000 affects income negatively due to the partial compensation for the price reductions. This is hardly mitigated by lower feed costs in the intensive livestock sector, as output prices fall as well due to competition and sluggish demand. The development over time is therefore also less favourable as in the base case (cf. table 4.9). Farming income per worker now increases by an annual 2.7 %, against a full 3 % before the reform (as shown in table 4.4).

Table 4.9 Farming income and employment, EU-15

	1995	2000	2005	2010	Growth rate
Total farming income (bio €)	138.8	138.2	140.3	144.6	0.3
Farm population (mio)	7.8	7.0	6.2	5.4	-2.4
Farming income ('000 €/cap.)	17.8	19.8	22.5	26.6	2.7

We conclude that under the current modelling assumptions the increase in premiums and the lower feeding costs are not enough to compensate for the fall in prices. The income loss due to the reform in 2010 is almost 4 % in terms of income from all agricultural activities.

Agricultural Budget

The total of premiums exceeds the reference level by 5.6 bio euros, but the refunds are 1.9 bio euros lower. As other items hardly change or are kept constant in real terms by assumption, the EAGGF budget rises when the implementation sets in, but soon after 2000 the eroding effect of inflation and the stabilizers prevent further growth. As can be seen from table 4.10, the rise in EAGGF respects the official guideline of 74 % of GNP growth.

Table 4.10 EAGGF budget, Agenda 2000 (mio €)

	1995	2000	2005	2010	Growth rate
EAGGF total	35077	39005	38762	37521	0.45
of which refunds on trade	7710	6219	4902	3667	-4.83
of which premiums	18792	21625	22861	22777	1.29

One reason for the modest increase is that exogenous budget items were assumed to remain constant in real terms. Another reason is the application of ceilings and reference areas, through which the Commission can affect the growth rate of the premiums. Also note that the costs of additional adjustments needed to remain within the GATT commitments (such as storage costs or increase in set-aside) were not included here.

5. Summary and conclusions

Model simulations are generally more insightful if the scenarios under investigation exhibit significant differences. Under Agenda 2000 the CAP is only marginally different from what would happen if the CAP remained unchanged. As compared to the 1992 reform that was implemented over the period 1993-1995, the Agenda 2000 decision is a further step towards liberalization. Internal prices move further towards world market level and refunds decline. Though the acreage and headage premiums constitute a burden to the budget, EAGGF growth remains below the guideline. Incomes per capita fall due to the reform measures, with an EU-average of 3.2 %, compared in 2010. The headage and acreage premiums are insufficient to maintain farmers' incomes at pre-reform level, under the assumption that the reduction in the intervention prices of cereals, beef, and milk translates fully into market and farm-gate prices. Consumers benefit from the reform. They acquire more food while their consumer expenditures fall by 9.98 bio euros, i.e. 27 €/cap. Furthermore, Agenda 2000 makes it easier to meet existing GATT commitments. The reform also seeks to facilitate the intended enlargement of CEECs. Yet, as is often the case, this CAP reform is also characterized by aspects it does not address explicitly. A balanced assessment calls for a few remarks on these aspects, more specifically on the contribution to trade liberalization and CEEC accession.

With respect to trade liberalization, a few remarks are in order. First, Agenda 2000 basically leaves the import regimes intact, and this implies for cereals that the system of variable import tariffs is being maintained (although at a lower level of protection), preventing price fluctuations on the world market from being transmitted fully to the EU market. Such a transmission would improve world market integration, and thus strengthen the signalling role of prices as scarcity indicators. It would also remove the artifact that the EU keeps prices of wheat and feed grains moving in parallel. Second, Agenda 2000 does not expand market access. Developing countries could benefit greatly from improved access for products such as sugar, fruits and vegetables. Thirdly, the implementation of market access commitments via tariff quotas is cumbersome,

discriminatory for exporters, and in need of improvement. At present the EU opts for a status quo whereby preferential access is being granted through special agreements. Finally, Agenda 2000 attempts to increase the transparency of domestic support measures for crops. It harmonizes, with a few exceptions, the premiums for arable crops. Set-aside remains an active instrument for production control. This significant harmonization of premium rates per hectare strengthens the argument of support being decoupled. Under the strictest interpretation, only decoupled premiums, such as R&D and extension services, qualify as WTO-compatible. Whether these harmonized hectare premiums are to be accepted as such remains a matter to be settled during the new trade round.

Regarding the impact on the CEECs, the price reductions decided in Agenda 2000 reduce the price gap between the EU and these countries, and this facilitates their accession. As already argued in the previous evaluation of Agenda 2000, it remains questionable whether the reduction is sufficient to avoid an important increase in consumer prices in CEECs upon accession. This holds now even more since price changes are now less deep and further postponed. If the current slump on world markets persists, these countries might by the time have lowered their internal prices so as to let their consumers benefit, and in this case the gap would be wider.

Yet all this cannot undo that Agenda 2000 is best characterized as a modest extrapolation of the 1992 reform. In the longer term the CAP will necessarily need a more radical reform, not only to mitigate the surpluses described in our scenario simulations, but also to adapt to new circumstances. Consumer concerns and vertical integration call for a policy that deals with product chains rather than with the pricing of agricultural raw materials. In this connection the multi-functionality approach may prove effective (CEC, 1998d). It replaces the publicly funded farm income support by a system that rewards the satisfaction of consumer concerns and rewards various services relating to tourism, and preservation of the landscape and the environment. The consumer can pay for this indirectly, through the price of labelled products that meet consumer concerns, or directly, through entrance fees in parks, or as tax payers, via a contribution to landscape preservation. At the same time, farmers will have to pay for environmental damages caused. In such a setting, the countryside becomes much more than a producer of raw materials, and offers a variety of alternatives to agricultural employment. In this way, production characteristics such as animal welfare and preservation of rural life and natural amenities can receive their remuneration. This goes beyond the “cross-compliance” requirements stated in Agenda 2000 according to which farmers also comply with environmental objectives in return for payments received, see CEC (1997b) and calls for explicit and independent assessments of the contributions made and the damages caused by a given farm operation. Most importantly, since multi-functionality payments can be viewed as a regular reward for services delivered, they should qualify relatively easily as Green Box measures, provided they are not used to harbour new measures of agricultural support. As the revenue from multi-functionality payments does not fall with increased imports, farmers become less dependent on price support and have more to gain from further trade liberalization.

To sum up, world food prices are currently low, and they are not expected to pick up very soon, although the economic recovery in East Asia and the opening up of Chinese markets might lead to significant increases in demand for feed grains. During the Uruguay Round it was common practice to blame the protectionist agricultural policies of OECD countries but this line of argumentation has now lost much of its force. There are good grounds for arguing that the low prices are due to the crises in Asia and Russia,

which caused a severe reduction in demand for feed grains, and to the lack of effective liberalization. The GATT 1994 agreement put a mechanism in place but did not generate much tariff reduction or increased import access. Be this as it may, most experts had predicted that the agreement would cause world prices to rise and they may now find it difficult to convince policy makers that these prices would have been even lower had no agreement been reached. Indeed, the main parties in Seattle have now even agreed to disagree on the agenda for the coming round, and it will presumably take a quite while before a consensus is reached. In such a context, it is understandable that through the CAP reform of Agenda 2000 the EU is seen to adopt a careful, albeit conservative position. This may be interpreted as an opening bid for the WTO round, that enables the EU to conduct the various parallel negotiations with ACP-countries, with CEECs, with China, and possibly even with regional blocks such as Mercosur and NAFTA. But in the longer term further CAP reform seems inescapable, and then multifunctionality may offer a promising alternative.

Conclusions

1. Simulation results show that continuation of present CAP regulations would yield favourable outcomes for the EU budget and farm incomes, while raising serious problems with respect to satisfaction of existing GATT commitments, especially for cereals. Moreover, a pricing regime that keeps intervention prices substantially above world market prices makes accession of Central and Eastern European countries (CEECs) more difficult, as the budgetary cost becomes higher and food prices in the new member states will increase substantially. Against this background, the Commission's decisions in Agenda 2000 can be viewed as supplements to the policy introduced in 1992.

2. The effects of Agenda 2000 can be summarized as follows. The total premium amount will rise by 5.6 bio € in 2010 in real terms, as compared to the reference scenario. Export refunds decrease by 1.9 bio €, keeping the EAGGF budget below the official spending guideline. Average farming income in the year 2010 is lowered by 3.2 %per worker as compared to the reference scenario. Consumers gain as their tax burden increases by 4.6 bio €, while they save 10 bio € on food expenditures. The gain from the reform could be higher, if it results in improved efficiency within the non-agricultural sector.

3. Regarding the GATT commitments, it appears that if world cereal prices recover as slowly as assumed in this analysis, wheat exports without refunds are hard to realize during the implementation period of Agenda 2000. For coarse grains, export subsidies are still required, and for dairy products and beef the price reductions generate savings on export subsidies. Overall, the product-related subsidies (premiums per hectare and per animal) increase to compensate for the fall in intervention prices, while for crops the premium levels tend towards harmonization. Whether this harmonization will be sufficient to ensure GATT-compatibility will have to be settled in the Millennium round.

4. The Agenda 2000 decisions make the accession of Central and Eastern European countries easier, because they lower the existing price differences. It may be questioned whether the reforms go far enough in this respect, because the price differences for dairy products, sugar and, to a lesser extent, beef remain significant. It would seem likely that the new member states will need a significant transitional period before they can fully harmonize their prices. Furthermore, the system of premiums per hectare and per animal implies an inherent budgetary risk, because the newly admitted countries could eventually

claim these subsidies as well, on top of the aid they are already receiving from the structure and cohesion funds.

6. Maintenance of the set-aside obligation to ten per cent maintains an inefficient utilization of agricultural land but the relaxation of milk quotas is an improvement in this respect.

7. The Agenda 2000 decisions are conservative with respect to liberalization of import access. The Commission still sees price stabilization on the internal market as an important policy objective, and proposes to maintain the present system of protection through variable import tariffs and tariff quotas. For cereals, this implies that the internal price of animal feed will not rise when there is a shortage outside the EU, and this intensifies the price fluctuations on the world market and shifts the full burden of short-term adjustment to traders and consumers outside the EU. For sugar, vegetables and fruits, which are currently subject to tariff quotas or seasonally imposed protective measures, the strict regulations will remain in effect, and Agenda 2000 does not contain any new initiatives in this area. Consequently, developing countries will have to continue coping with a maze of restrictions when they seek to export to the EU in the future, although those who finally gain preferential access will receive a significantly higher price than would have been the case under free access. In short, for those wishing to export to the EU, little will change.

8. In the longer term further CAP reform seems inescapable, and the multi-functionality approach may offer a promising alternative.

Annex A Additional scenario outcomes for the year 2010

Reference scenario vs. Agenda 2000 scenario

Table 4.11a Net revenues and activity levels in 2010

	Net revenue per unit (€/ha or €/head)		Activity level ('000 ha or '000 head)	
	Reference	Agenda 2000	Reference	Agenda 2000
Soft wheat	716	624	14093	14770
Durum wheat	636	629	3159	3226
Rye and maslin	337	278	1353	1394
Barley	429	403	10733	10873
Oats	282	261	1937	1974
Maize	885	766	3928	3883
Pulses	1257	1341	1789	1698
Sugar beets	1712	1711	1860	1858
Rape seeds	366	310	2861	2436
Sunflower seeds	394	286	2565	2371
Dairy cattle	363	323	58340	58845
Non-dairy cattle	796	705	11743	11449

Table 4.11b EAGGF/EU budget in 2010 (mio €)

	Reference	Agenda 2000
Refunds	5553	3667
Stockholding cost	392	392
Producer subsidies	3983	3687
Subsidies on demand	1402	1461
Premiums	17180	22777
Voluntary set-aside	587	587
Direct transfers	5	1105
Other EAGGF	3846	3846
EAGGF total	32948	37521
Administration costs	4129	4129
Development aid	3967	3967
Other expenditure	11767	11767
Other funds	20428	20428
Total outlays	73239	77812
Levies on trade	685	491
Levies on production	1237	1235
Custom duties	13608	13608
National contribution	53611	58380
Other receipts	4098	4098
Total receipts	73239	77812

Annex B The CAPMAT simulation tool

CAP-Modelling and Accounting Tool (CAPMAT) consists of three components:

- a dedicated database,
- an applied general equilibrium (AGE) model to simulate overall medium term effects,
- a simulation and accounting tool that uses outcomes from (1) and (2) to perform scenario calculations.

B.1 *Databases*

The main components of the database are (i) the FAO-Supply Utilization Accounts (SUA), (ii) the SPEL data base, (iii) the EXMIS trade database, for extra-EU trade, (iv) the Economic Accounts of Agriculture from EUROSTAT, (v) the reports by the Court of Auditors (1977) and (vi) the EU-budget documents. All databases are completed and scrutinized up to and including 1995; EAGGF data for 1996 have been used to reflect the most recent policy stance. One distinguishing feature is the computerized aggregation procedure for Supply Utilization Accounts. This makes it possible to express supply, demand and international trade of a processed commodity such as macaroni in terms of the original commodity wheat and derive a consolidated wheat account for use in CAPMAT. This is important, since agricultural trade policy is usually concerned with overall imports and exports of processed products that contain agricultural raw materials, rather than with the trade in the raw material itself. Demand categories are more aggregated than in the original Supply Utilization Accounts: human consumption, other utilization and imbalances (when they exist) are taken together as consumption. Another special feature is that the databases are inter-linked; repercussions of policy changes on, say, budgetary items like refunds and premiums and production and trade can be shown in a consistent way.

B.2 *ECAM-model*

The basic analytic engine for the analysis is ECAM, see Folmer et al. 1995, a model of the applied general equilibrium (AGE) type that generates the basic developments with respect to supply, demand and cross-commodity substitution. ECAM distinguishes country modules and an aggregate EU module. Consumers maximize utility subject to a budget constraint, farmers maximize net revenues. They allocate crops to available land and livestock types to available buildings and equipment. The crop allocation module includes three forage activities that produce non-marketable green fodder. Budgetary rules reflect closely actual CAP regulations including the balance of the Community budget through adjustment of member contributions. Detailed country modules are currently available for the original EU-9. A link to the database was created, that makes it possible to process the model results for simulation and accounting.

B.3 *Simulation and Accounting Tool* (SAT)

The Simulation and Accounting Tool (SAT) is a GAMS program that performs a dynamic simulation to derive the implications of various price and compensation scenarios under

assumed or calculated trends at detailed commodity level, applying selected growth factors from the ECAM model to the information extracted from the database.

In terms of its relation to the ECAM model, SAT makes two important simplifying assumptions:

- for endogenous variables (acreage, headage, human consumption and feed composition) in countries not covered by the ECAM-model the factors of a 'sister'-country are applied;
- for commodities where the treatment in SAT is less aggregated in than in ECAM a common growth factor is applied to all members of a subset.

Hence, SAT is a perfectly independent package that could read its information from any other model than ECAM, or base its scenarios on explicit assumptions only. This enhances its flexibility of use and its scope for future applications.

B.4 Units of measurement

Activity levels are in 1000 ha ('000 ha) for crops and in 1000 heads ('000 head) for livestock, except poultry and laying hens which are in million heads (mio head). Acreages of the crops that fall under the set-aside scheme are presented with the set-aside included. Net revenues, subsidies and premiums per unit of activity are in €/ha and €/head. Monetary Values are generally in '000 euro, but in mio euro when it concerns Revenue from farming and the budget. Prices are in €/ha or €/head (for poultry and laying hens in €/'000 head). Quantities of the commodities on the supply utilization account are listed below ('000 t denotes 1 000 metric tons). Note that quantities of milk and dairy products are expressed in their fat and protein contents, and that all dairy products are aggregated along their processing relationships to consolidated balances of fat from milk and protein from milk. The protein from milk is expressed in milk equivalents, and named skimmed milk. In the aggregation procedures FAO conversions factors have been used throughout.

Commodity	**Unit**	**Explanation**
Wheat	'000 t	wheat and wheat products (like flour)
Coarse grains	'000 t	barley, oats, rye, maize, other cereals
Rice, milled	'000 t	
Pulses	'000 t	
Sugar refined	'000 t	white equivalent
Fats and oils	'000 t	all fats and oils of vegetable and animal origin
Protein feed	'000 t of protein content	mainly cakes from oilseeds
Carbohydrates	'000 t of carbohydrate content	
Fresh fodder	'000 t	
Dry fodder	'000 t	
Fat from milk	'000 t of fat	
Skimmed milk	'000 t of protein expressed in milk equivalent	
Beef and veal	'000 t	
Pork	'000 t	
Meat from sheep and goats	'000 t	
Eggs	'000 t	
Poultry meat	'000 t	incl. ducks, turkeys, geese

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